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September 18, 2020

Colleen Reardon, Secretary
Rockaway Borough Planning Board
1 East Main Street
Rockaway, New Jersey 07866

Re: Stormwater Management Review Component

RPM Development LLC Minor Subdivision/Preliminary & Final Major Site Plan Application
Block 73 Lot 65
West Main Street and Mount Pleasant Avenue
Project No. 20RB203 – Stormwater Management Review

Dear Colleen:

The above application has been submitted for minor subdivision, preliminary and final site plan approval. The subject property has frontage on West Main Street and Mount Pleasant Avenue and is located within the R-1 zone, the O-B zone, and the G-B Zone with the Affordable Housing-Senior (AHO-S) overlay. The applicant is proposing a two-lot subdivision (one new lot and one remainder lot). On the remainder lot, the applicant is proposing to construct an apartment building with 64 senior housing units, along with two entrance driveways that will have access to West Main Street, parking areas, sidewalk and associated site improvements. The new lot is located within the R-1 zone and an existing dwelling is proposed to remain that will have access to Mount Pleasant Avenue. The following items have been submitted in support of the application.

1. Stormwater Management Plans, consisting of seven sheets dated September 3, 2020 prepared by Kenneth D. Dykstra, Dykstra Walker Design Group, Lake Hopatcong, NJ.
2. Stormwater Management Calculations, dated July 14, 2020 and revised September 3, 2020, prepared by Kevin J. Robine, PE.

A review of the above documents results in the following stormwater comments for the Board's consideration:

Stormwater Management Report

- A. The design of the stormwater management system is fundamentally sound, however the Applicant must demonstrate they will be able to comply with the following key points:
 1. Approval for the discharge to the Fox Brook/Rockaway River appears to require approval from NJDEP DLUR. It appears that 95% TSS removal may be required

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since the system discharges to the Fox Brook/Rockaway River, which are category one water courses.

2. Approval from Morris County is required for the proposed drainage system within the County right-of-way.
3. Based on the soil log information provided on the plans, testing for the seasonal high ground water table within infiltration basin #3 was conducted in August whereas it needs to be established during the wet season. A minimum of two foot of separation needs to be provided between the bottom of the sand layer and the seasonable high water table in accordance with the NJDEP BMP Manual.
4. Additional soil testing in accordance with Appendix E of the NJDEP BMP Manual is required for proposed infiltration basin #3. Test Pit #13 located within the footprint of infiltration basin #3 indicates the percolation test was aborted. Notes in the report indicate the soil horizon will be replaced with K3 material or greater. However, the bottom of the soil horizon tested is only 6” below where the perc test was taken, and the note indicates the upper horizon was unsuitable for infiltration. It is not clear if the lower horizon had an impact on the infiltration (since the upper and lower horizons are nearly identical to each other). The BMP Manual requires a minimum of one soil permeability test be performed at each test pit (two test pits minimum) where only one passing permeability test was provided.
5. The groundwater mounding analysis indicates a mounding height of 4.25’ at the infiltration basin, which would be above the basin floor (groundwater was identified at 6’ depth, ~ 538.0, test pit #13). The analysis needs to be revised to ensure the mounding will not impact the functionality of the basin.
6. The final soil testing required for the project will necessitate some overall site grading to provide access. Any approval by the Board should include the requirement for a developer’s agreement that allows for preliminary site excavation work to be completed for access for the testing. The testing will need to be completed prior to the issuance of construction permits and the developer should provide a phase soil movement plan that allows for the testing to be completed.

B. Detail Review Comments

1. The flowrates depicted on page 2 of the report within the stormwater quantity control table are not consistent with the calculations. Revise as necessary.
2. A low impact development checklist needs to be provided in the report.
3. Attachment D – Major Development Stormwater Summary of the Tier A Municipal Stormwater General Permit needs to be completed by the Applicant.
4. The routing of all the infiltration/detention basins assumes free flow conditions. The routing analysis needs to include the outlet pipe capacity including inlet control and any effect of downstream tailwater, including backwater effects of downstream basins that may affect the functioning of the proposed system (inlet/outlet control calculations). Based on the routed water surfaces within

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- Basin #3, Basin #1 will be inundated with backwater from Basin #3. The analysis needs to be provided for all basins.
5. The NJDEP BMP Manual specifies “Infiltration basins may not be constructed in areas where the surrounding slopes are 15% or greater.” The Applicant should provide testimony on whether the existing/proposed slopes greater than 15% will affect the functionality of the proposed infiltration basin #3. Sufficient engineering data needs to be provided to demonstrate the system will function properly in order to overcome the presumptive standard in the BMP Manual.
 6. Additional soil testing in accordance with Appendix E of the NJDEP BMP Manual is required for proposed infiltration basin #3. Test Pit #13 located within the footprint of infiltration basin #3 indicates the percolation test was aborted. The BMP Manual requires a minimum of one soil permeability test be performed at each test pit (two test pits minimum) where only one permeability test was provided.
 7. The existing Tc calculation is missing the 205 If pipe segment from the channel flow calculation. Also the pervious shallow concentrated flow within the calculation should be broken up into additional segments to distinguish the flatter slopes from the steeper slopes.
 8. It appears the existing area immediately above POS#1 on the existing drainage area map is part of EX1 however the area is bounded by the heavy dashed lines (indicating it is a separate drainage area). Clarification is required.
 9. The peak flow rate reduction calculation utilizes an area of 11.48 acres while the existing drainage area is depicted as 11.94 acres. It appears the 11.48 acres area was associated with a prior application for the site. The Engineer shall confirm and revise as needed. The Engineer shall also confirm the amount of disturbance being proposed.
 10. A one-minute time interval should be utilized in the calculations verses the 3-minute interval used.
 11. The Engineer shall confirm the amount of impervious area used within the analysis is consistent with what is being proposed. The analysis utilizes within drainage area #1, 1.51 acres of existing impervious coverage (includes offsite impervious area). Based on the zoning table, 1.89 acres are proposed onsite on Lot 65.01. Under proposed conditions, the amount of existing offsite impervious area appears to be approximately 1.4 acres (including the impervious area remaining on proposed lot 65.02, where approximately 0.1 acres of concrete and gravel is proposed for removal). Based on this, the total amount of impervious coverage within drainage area #1 under proposed conditions appears to be approximately 3.3 acres while the quantity analysis utilized a total impervious coverage of 2.96 acres. Clarification is required.
 12. The Engineer shall confirm the amount of wooded area being utilized within PR1C. The analysis is utilizing 1.11 acres while it appears to be closer to approximately 0.6 acres. It is recommended that an electronic file of the drainage

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- area maps be provided with the coverage areas delineated on it. Note that not all subareas have been checked.
13. Spot elevations need to be provided within the bottom of surface Basin #2 to confirm the basin will drain adequately (no ponding/bird baths) and also to confirm the volume used for the basin routing. The contour area of the 560 contour should also be confirmed.
 14. The means for providing water quality control for runoff from the throat of the entrance and exit driveways should be addressed since these areas are not tributary to the proposed infiltration basin.
 15. The text of the report describing the stormwater quality control (page 3) does not reflect the current design. Revise accordingly.
 16. A copy of the water quality storm distribution (1.25 inches in 2 hours) used in the analysis should be provided in the report.
 17. A 10 minute time of concentration was utilized for impervious areas within the water quality analysis. This is not correct for NRCS methodology.
 18. The proposed grading at the entrance and exit drives indicates the center of the driveways are lower than the proposed inlets. This will result in runoff shown currently as being tributary to the proposed storm sewer system and detention/infiltration basins bypassing the systems and draining directly to West Main Street. The analysis needs to be revised to account for this.
 19. Any additional runoff that drains directly to the storm sewer structures 14 and 15 (downstream of basin 1) needs to be accounted for within the storm sewer analysis.
 20. The inlet drainage area map identifies drainage area #18 while it appears it should be to inlet #12.
 21. The proposed storm sewer system needs to be checked for the 100-year storm event to ensure upstream inlet/pipe systems will not overtop to other drainage areas (and possibly bypass any of the proposed detention/infiltration basins).
 22. RSIS specifies the maximum capacity of a curb type inlet shall be 6 cfs. The storm sewer calculations indicate this will be exceeded at inlet 16. It was not clear if the maximum would also be exceeded at other structures. The peak flow rate tributary for each individual inlet should be provided.
 23. The storm sewer analysis utilizes a runoff coefficient adjustment factor. Since the storm sewer system will need to convey the 100-year storm event for the system to function as designed, an adjustment factor should not be utilized in calculating the peak flow rates.
 24. The Engineer shall confirm there is no backwater effect from Fox Brook/Rockaway River onto the existing storm sewer system along West Main Street into which the onsite drainage system is connecting.
 25. Hydraulic grade line calculations should be provided for the proposed storm sewer system (including the outlet pipe system from each basin and the downstream storm sewer system).

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26. A drainage area map with the existing and proposed onsite conditions (with impervious, open, wooded areas broken out) utilized within the groundwater recharge spreadsheet needs to be provided.
27. Routings depicting when the basins completely drain need to be provided in support of the drain time calculations that have been provided.
28. It is not clear what the design flow was based upon in the emergency spillway calculations (the 100 year peak flow rate was not used). The emergency spillway storm should be routed through the basin with the outlet included in the routing to confirm it will not control the discharge (verses just analyzing the E-inlet grate at the top of the structure).
29. The top of berm for basin #3 appears to coincide with the sidewalk (el 547.5). A 6' minimum width needs to be provided in accordance with RSIS standards.
30. The infiltration rate utilized within the groundwater mounding analysis needs to be confirmed with additional soil permeability testing.
31. Note that the results from the Hantush Spreadsheet provide only the mounding height along the x-direction. Therefore, for a rectangular basin, the inputs for x and y must be re-entered, i.e., with the length and width switched, to check the groundwater mounding in the other direction. This analysis needs to be provided.
32. Off site stability calculations require approval/certification from the Morris County Soil Conservation District. Any application to the Soil Conservation District should explicitly state that the calculations are being submitted for their review and approval.
33. Details for the proposed stormwater management system have not been submitted for the current design. Comments are deferred until such time as the details are provided for review.
34. Post development soil testing in accordance of the NJDEP BMP Manual, Appendix E for the proposed infiltration basin needs to be provided on the plans.
35. The construction requirements in accordance of the NJDEP BMP Manual, Appendix E for the proposed infiltration basin needs to be provided on the plans (Chapter 9.6, pages 5&6).
36. Once the overall design is approved, a final operations and maintenance manual will need to be submitted for review and approval.

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I trust the above comments are useful to the Board in its consideration of the application.

Very truly yours,

A handwritten signature in black ink, appearing to read "Paul W. Ferriero". The signature is fluid and cursive, with a long horizontal stroke at the end.

Paul W. Ferriero, PE, CME
Borough Engineer

cc: Board Members
John Mills, III, Esq.
Golda Speyer, PP
Larry Weiner, Esq.
Alyse Landano Hubbard, Esq.
Kenneth Dykstra, PE, PLS